

area reticulated; triangles moderate in the anterior, *short in the posterior*; *subnodal sector furcated* midway between the nodus and pterostigma; *a single row of cellules in the area between the subnodal sector and the interposed sector below it.*

Type *Æschna Milnei*, Selys (Japan).

The type of *Æ. Milnei* is in my collection and is obviously not a true *Æschna*, differing in its subglobose face, and especially in the single row of cellules between the subnodal sector and the interposed sector below it.

According to the system of Karsch (Entom. Nachr. xvii.) *Planæschna* seems (in the absence of the male) nearest to the American *Epieschna*, which differs from it mainly in the abdomen not being constricted near the base, in the much longer triangles, and in the presence of two rows of cellules in the space between the subnodal sector and that interposed.

LXI.—*On the Scorpions, Centipedes, and Millipedes obtained by Dr. Gregory on his Expedition to Mount Kenia, East Africa.* By R. I. POCKOCK.

[Plate XVIII.]

Part I.—SCORPIONS.

Family Buthidæ.

Buthus Eminii, Poc.

Buthus Eminii, Pocock, Ann. & Mag. Nat. Hist., July 1890, pp. 98-100, pl. i. fig. 2.

Loc. Ndara and Athi Plains. A female example obtained at each locality. The male example was procured by Emin Pasha on the shores of Lake Victoria Nyanza.

I suspect this species will prove to be identical with *Centrurus trilineatus*, Pet., from Tete.

Parabuthus pallidus, Poc.

Parabuthus pallidus, Poc. Journ. Linn. Soc., Zool. xxv. p. 312.

Loc. Giriama, near Fuladoya. A single very young specimen.

The types of the species were from Mombasa.

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Babycurus pictus, sp. n. (Pl. XVIII. fig. 1.)

? *Babycurus centrurimorphus*, Karsch, Berl. ent. Zeitschr. xxx. p. 78, pl. iii. fig. 2 (1886).

♀.—*Colour*. Carapace yellow, variegated with five longitudinal black bands, one median extending from the anterior border across the tubercle almost to the hinder border, one on each side passing backwards from the lateral eyes, and one on each lateral margin, whence patches of the same colour pass inwards, near the side of the posterior border there is on each side a distinct patch; terga yellow, with three longitudinal black bands, one in the middle and one on each side; these do not spread on to the seventh tergite; tail pale yellow, except for three rather indistinct fuscous spots on the lower surface of the second, third, and fourth segments, one in the middle and a pair at the posterior end; chelæ yellow, digits alone black in their basal half; legs yellow, faintly spotted with black, one spot in the middle of the femur, another on the patella, and one at the base of the two tibial segments.

Carapace as long as the first and half the second caudal segments, finely granular throughout, but not crested; ocular tubercle low, with smooth ridges.

Terga finely granular, the median crests distinct, granular, the lateral crests on the last strong and granular.

Sterna smooth, punctured, the last with neither granules nor crests.

Tail nearly five times as long as the carapace, the fourth segment a little wider than the fifth, third, and second, and equal to the first; segments almost smooth, only minutely granular when examined with a high power; keels all weak and scarcely to be called granular, the lower surface of the third, fourth, and fifth segments without visible keels.

Chelæ almost smooth, the crests very weakly granular; hand without crests, smooth, wide, a little wider than the brachium, the width equal to nearly half the length of the movable digit, which is only one third greater than the length of the hand-back; digits short, unmodified, the movable with 7 median rows of teeth (including the small apical set and regarding the long basal row as single), 7 larger external teeth, and 7 larger internal ones.

Legs weakly granular.

Pectines with 19 teeth.

Measurements in millimetres.—Total length 51; carapace 5.5, tail 28, of movable digit 5.

Loc. Athi Plains. A single female example. Also two examples of a closely allied though not quite identical form, from Niomkolo, Lake Tanganyika (*A. Carson*), which are not sufficiently well preserved to be satisfactorily identifiable.

The genus *Babycurus* is of considerable interest from a taxonomic point of view, on account of the position it occupies with regard to the other genera of the Buthidæ and the stumbling-block that it constitutes in the way of the adoption of the two classifications of the family that have been proposed by Dr. Thorell and by Prof. Kraepelin. The former divided the genera into two subfamilies, the Androctonini and the Centurini—the former being characterized by the presence of two lower teeth on the immovable mandibular fang, while in the latter there is only one such tooth or none. In my paper on “A Revision of the Genera of Buthidæ” * I ventured to suggest that such a classification was untenable †, in view of the discovery of many genera of Buthidæ since 1876, when Thorell wrote; and I further ventured upon the statement that, in my opinion, the family was not susceptible of division into groups of the value of subfamilies.

The first opinion is, I think, borne out by the classification proposed in 1891 by Kraepelin, who attributed only a subsidiary importance in his scheme to the dentition of the mandible, but regarded the so-called tibial spurs and the dentition of the fingers of the chelæ as being of primary value. Taking these two characters into consideration, he split up the Buthidæ (Androctonidæ ‡) into three subfamilies:—(1) Androctonini, with a tibial spur on the fourth and usually on the third leg as well; (2) Isometrini, and (3) Centurini, the latter differing from the former in having the additional external teeth on the fingers of the chelæ. This use of the tibial spurs was, to my mind, a great advance in our knowledge; but I do not consider that the difference in the dentition between *Centrurus* and *Tityus* is sufficient warrant for referring them to distinct subfamilies. An exactly analogous

* Proc. Zool. Soc. 1890, pp. 114 &c.

† To be logically consistent Thorell should, I think, have referred his genera to *three* categories, namely:—(1) those with two of these teeth; (2) those with but one; and (3) those with none. For it is difficult to see the grounds for uniting 2 with 3 rather than with 1, since, according to the character cited, it holds an intermediate position between the other two.

‡ Thorell, and following him Kraepelin, calls the family Androctonidæ. I prefer Simon's name Buthidæ, on the ground that *Androctonus* is a synonym of *Buthus*.

difference obtains between the genera *Hadruiroides*, Poc., and *Caraboctonus*, Poc., as I have already pointed out *, yet no one regards the character in this case as of more than generic value. I submit, therefore, that we are logically compelled to fuse the Isometrini and the Centrurini into one group, and if a name be required for it the latter, as the older, must be retained. This reduces Kraepelin's subfamilies to two; but the further question to be discussed concerns the value that he attributes to the tibial spurs. According to his table the genera fall into two groups, namely those possessing tibial spurs (Androctonini) and those without them (Centrurini in the wider sense defined above). At first sight this looks reasonable enough, but, when critically examined, it seems to me to fail in consistency in just the same way that Thorell's system did; for the genus *Babycurus* occupies an intermediate position between the two sections. In fact, if classified according to the pedal spurs, the genera must be referred to *three* sections, namely:—(1) those with these spurs on the third and fourth legs; (2) those, or rather the one, with them only on the fourth leg; and (3) those with them on neither leg. I confess that, in my opinion, if the Buthidæ are to be divided into subfamilies upon the presence or absence of the pedal spur, it will have to be into the following three:—(1) Buthini, with the third and fourth pairs of legs spurred; (2) Babycurini, with the third pair not spurred; and (3) Centrurini, with the third and fourth pairs not spurred. But if exception be taken to this partition of the genera (and it is certainly, I think, open to criticism), I see no escape from the conclusion expressed by myself in 1890, that the character or characters which justify the splitting of the family into subfamilies have yet to be found.

Since 1890, when I wrote an account of the South-African Buthidæ contained in the collection of the British Museum (P. Z. S. 1890, pp. 114–141), several additions have been made to our series of *Babycurus*. The first and most important is a series of six examples from Cette Cama (or Sette Camma), south of the Gaboon. These are of especial interest, inasmuch as Karsch's types of *B. Büttneri* (Berl. ent. Zeit. xxx. p. 78, 1886) also came from the Gaboon, though from a spot called Sibangefarm, which I have so far failed to discover on the atlases. These specimens, moreover, agree more closely with the description of *B. Büttneri* than any others examined by me. To the colour-characters mentioned below it may be added that the lower surface of the tail is

* Ann. & Mag. Nat. Hist. (6) xii. p. 329.

deeply infuscate, especially towards its extremity, though the upper surface and the vesicle is reddish. The sexes are easily distinguishable; in the female the hand is barely as wide as the brachium, its width being about one third the length of the movable digit*; the two digits are straight and in contact; the first segment of the tail is the widest, but the second, third, fourth, and fifth are equal in width; the pectines are short and furnished with 18 or 19 teeth. The largest female measures 66 millim., the carapace being almost 7 and the tail 37. In the male, on the contrary, the hand is much wider than the brachium (3:2), its width being nearly half the length of the movable digit, which is slightly lobate at the base, while the immovable is somewhat strongly sinuate; the tail is wider than in the female, being almost parallel-sided, the fourth and fifth segments equalling the width of the first and slightly exceeding that of the second. In both sexes the tails are perfectly smooth to the touch, though in reality they are exceedingly finely granular, with very weak keels. The pectines are longer, with 19 or 20 teeth. Length of largest male 54 millim., of which the carapace is 5.8 and the tail 33.

The examination of these forms has shown me that *B. Kirkii*, Poc., the type of which, though decolorized, shows the dark-tinted brachium characteristic of the West-African species, is closely allied to *B. Büttneri*, from which it apparently differs merely in the greater exaggeration of its sexual features, as evidenced by the greater width and smoothness of the tail. If such characters increase with age I could well believe the type of *B. Kirkii* to be nothing but an aged individual of *B. Büttneri*.

In the footnote to my description of *B. Kirkii* mention is made of a couple of examples of a scorpion from Rio del Rey, near the Old Calabar River, which were referred to *B. Büttneri*; but since seeing the examples mentioned above from Cette Cama I am compelled to change my opinion about the identity of the Rio del Rey examples; and since they are both readily distinguishable either as subspecies or species from the Cette Cama form which apparently comes nearest to the typical *B. Büttneri*, I propose to describe the former as a new species under the name *Babycurus Johnstonii*. As stated in the synopsis below, this form is much darker coloured than *Büttneri*, the legs, hand, humerus, and upper surface of

* On this digit there are eight median rows of teeth, the basal one being long and undivided; the outer row consists also of eight, but the inner of nine, owing to the presence of one near the middle of the basal row of the median series.

the basal segments of the tail being an exceedingly deep red-brown, while the trunk is nearly black above. In addition to this the granulation is everywhere coarser, and the keels on the tergites, tail, and chelæ much stronger, the finger-keel on the hand standing up as a very conspicuous crest. Total length 62 millim., of carapace 7, of tail 37. Tail moderately robust, slightly attenuate posteriorly.

Two female examples from Rio del Rey (*H. H. Johnston*).

The British Museum also has an example of a *Babycurus*, resembling, though not quite identical with, the *Cette Cama* form, from the mouth of the Loango, north of the Congo (*H. L. Duggan*).

Synopsis of the Species contained in the British Museum.*

- a. The brachium of the chela strongly infusate, contrasting forcibly with the paler red or yellow colour of the manus; the finger-keel on the hand visible in the ♀ (though sometimes absent in the ♂, as, for instance, in the type of *B. Kirkii*); median eyes very large; an enlarged tooth on the middle of the inner side of the long basal series of the middle row on the digit.
 - a¹. Colour of trunk a uniform deep brownish black; brachium the same deep colour as the terga; hands, humerus, and legs a uniform deep red; keel on the hand strong and finely granular; granulation and keeling of the trunk, limbs, and tail coarser *Johnstonii*, sp. n.
 - b¹. Colour of trunk paler, variegated; terga blackish at the sides and along the median keel, pale yellowish red elsewhere; brachium (and sometimes humerus also) infusate; legs yellow, variegated with blackish spots; lower surface and hand pale yellow; granulation and keels finer *Büttneri*, Karsch.
- b. Chelæ (with the exception of the black digits) of a uniform yellow colour; hand without a finger-keel; median eyes smaller; no large tooth in the middle of the inner side of the long basal series of the median row on the digit.
 - a². Eight median rows of teeth on movable digit; the sides and lower surface of the tail thickly and somewhat coarsely granular; all the normal keels well defined and coarsely granular; upper surface of tail also granular, but more finely; last abdominal sternite finely granular and marked with four abbreviated crests; coloration uniform *Jacksoni*, Poc., ♀.

* I have failed to unravel to my satisfaction the specific characters of the remaining species of the genus as set forth by Prof. K. Kraepelin.

- ♂². Seven median rows of teeth on movable digit ; tail entirely smooth ; the keels exceedingly feeble, only minutely crenulate ; last abdominal sternite smooth, without crests ; trunk yellow, ornamented above with longitudinal black bands ; legs also slightly variegated . . . *pictus*, sp. n.

Family Scorpionidæ.

Scorpio cavimanus, Poc. (Pl. XVIII. figs. 2, 2 a.)

Scorpio cavimanus, Poc. Ann. & Mag. Nat. Hist. ii. p. 247 (1888).

When I described this species about eight years ago I had but a couple of specimens for examination—one obtained by Mr. F. J. Jackson near Kilima Njaro, and the other by Capt. Speke near Umyamuezi. Since then the British Museum has been enriched by the receipt of several more specimens, and amongst them two mutilated males obtained by Dr. Gregory at Kinani and a place 4 miles to the south of it. These specimens agree with the types, so far as can be judged from their condition, except that the hands of the chelæ are not so wide as the length of the carapace, the measurements being in one case 17·5 : 16·5 and in the other 16·5 : 15·5. The pectinal teeth are 14—14 and 15—16.

What I regarded originally as one of the most distinguishing characteristics of this species is the curious depression on the upperside of the hand at the base of the immovable finger. This feature I now believe to be a mark of the adult male ; at least it is conspicuous in all the six males that I have seen (examples varying in length from 76–110 millim.), but is absent in the one specimen of the female sex that the Museum possesses. The latter was obtained, together with a couple of males, at Ugogo, halfway between Zanzibar and Tanganyika, by Mr. E. J. Baxter ; she measures 92 millim. in length, has 13 pectinal teeth on each side, the hand more coarsely punctured than in the male, but without a depression. The tail is less than three times the length of the carapace, whereas in the males it is more.

Prof. Kraepelin (JB. Hamburg. Anst. xi. pp. 67 and 69) regards *Scorpio cavimanus* as a “form” of the Abyssinian *Sc. bellicosus* of L. Koch from Habab, which, in its turn, is but a subspecies of the great West-African *Sc. africanus*, Linn. For myself, however, I prefer to consider even *cavimanus* and *bellicosus* as distinct until accurately sexed specimens of the latter are brought to light. From the number of its pectinal teeth (19 or 20) I should be inclined to think the type of *bellicosus* must be a male ; but, if so, there is no evidence that the

upperside of the hand is excavated in the manner characteristic of *cavimanus*, and the tail is evidently very much shorter.

In all the examples that I have examined the spine-armature of the feet is very constant, consisting of but 7 spines, 4 on the posterior border and 3 on the anterior, in both cases there being 2 on each lobe, one in its middle, the other on its inferior angle, while the apex of the lobe is furnished with stout spiniform bristles, which, when fractured, resemble small spines. The same spine-armature is found in the other East-African species known to me, namely *Scorpio viatoris*, Poc. (Ann. & Mag. Nat. Hist. 1890, vi. p. 100), which was described from a specimen obtained by Emin Pasha, ticketed merely East Africa. Since then the Museum has received a couple of adult examples (male and female) from Zomba, Lake Nyassa (*H. H. Johnston*). These two show that the sexual characters of this species are very different as regards the chelæ from those of *Sc. cavimanus*, the chelæ of the male, instead of being larger than those of the female, are longer and lighter, with the hand only as wide as the length of the hand-back. The female has the sculpturing of the hands stronger and the tail shorter, the first and second segments being shorter than the carapace, whereas in the male they are rather longer. The male has 13—14 pectinal teeth, the female 13—13; whereas a young female (77 millim.) from Fwambo (*A. Carson*) has 14. The adult male measures 105 millim., the female 100, the carapace in both cases being 16, the tail in the male 60, in the female 52. The terga are much more coarsely granular than in *cavimanus*, and the crests which are so conspicuous on the lower surface of the anterior caudal segments and of the last abdominal sternite in *cavimanus* are weak or obsolete in *Sc. viatoris*.

Scorpio Gregorii, sp. n. (Pl. XVIII. figs. 3, 3a.)

Colour a uniform olive-brown; legs dark reddish brown, hand of chelæ paler reddish, fingers deep blackish green.

Carapace about equalling the first and second caudal segments in length; the median eyes well behind the middle; the anterior border with a median semicircular excision; carapace smooth towards the middle, sparsely punctured, distinctly granular at the sides; a row of setiform punctures along the anterior and posterior borders.

Terga smooth, somewhat coarsely but very sparsely punctured, the last coarsely granular at the sides, with traces of two crests.

Sterna smooth and polished, the last coarsely punctured on each side of the middle line.

Tail about $3\frac{1}{2}$ times the length of the carapace, narrowed posteriorly, somewhat compressed, the upper surface smooth, its side-keels high and strongly denticulated on the second, third, and fourth; lateral surface of segments granular; inferior keels on first and second smooth, punctured, on third weakly granular, on fourth and fifth almost denticulate; supero-lateral keel coarsely granular on all the segments. Vesicle large, granular below, its width equal to the width of the third segment, its height equal to the width of the fifth segment; aculeus stout, strongly curved.

Mandibles with the penultimate tooth of the movable fang enlarged and nearly as prominent as the apical.

Chelæ of normal length; humerus tubercular or denticulate above and in front, smooth behind and below; brachium weakly granular and subcostate behind and above, armed with a few granules below in front, smooth below and coarsely punctured behind; hand thick and large, with the lobe strongly produced internally; very convex above, not keeled, furnished externally and at the base of the fingers with smooth, rounded, irregular-shaped low tubercles, which towards the inner edge of the hand posteriorly fuse into a reticulated pattern and entirely disappear upon the posterior part of the lobe, which, as a consequence, is quite smooth; the distal half of the inner surface of the hand denticulate; hand-back smooth, punctured; lower surface not crested or keeled, coarsely granular in its distal half.

Legs of first and second pairs with proximal and distal tibial segments, each armed behind with two spicules; femora of fourth very feebly granular; tarsus of fourth with its lower surface armed behind with 8 spines, 2 of which are on the lobe, 1 on its inferior angle and 1 halfway up, with a bristle between them, the angle of the lobe being tipped with bristles; the distal spine on the lower edge of the foot is close to the lower one on the lobe; the spine-armature on the front (or outside) of the tarsus is the same, except that there are only 3 or 4 spines on the lower edge. The tarsi of the other feet present much the same armature.

Pectines with 17 teeth.

Measurements in millimetres.—Total length 117; length of tail 58, of carapace 16·2; distance of eyes from hinder edge 6·2; length of hand-back 10·8, of movable digit 16; width of hand 15·3, height of hand 7·5.

Lcc. Kinani, a single female (type); Tanganyko (confluence of the Athi), a single female; Tzavo, one male ob-

tained by Mr. George Wilson; sandy steppes south of Tzavo, five more or less mutilated specimens—an adult male, three females, and a young.

The females vary but little in structure, except that the legs and palpi are darker in colour and the sides of the carapace distinctly yellowish in the smaller examples; a very young specimen measuring only 46 millim. has the bands much narrower and the upper caudal crests smooth. The pectinal teeth are usually 18.

The males, on the contrary, differ considerably from the females. The tail is a little longer; the chelæ, however, are neither longer nor thinner, but the movable digit is furnished with a large lobe-like tooth, which fits into a corresponding notch on the immovable digit. The terga also are very distinctly though finely granular, and the carapace is not so smooth above; the pectines, though larger, do not appear to be furnished with a greater number of teeth, one specimen possessing 17 on each side and the other 18.

This interesting new Scorpion is allied to *Scorpio exitialis*, Pocock *, from Shoa, in Abyssinia: but in *exitialis* the hand is entirely covered with tubercles, which are more granuliform than in *Gregorii*; the lower surface of the hand is furnished with two strong granuliferous crests; the lower surface of the humerus is coarsely granular, the upper caudal keels are not strongly denticulate, and, lastly, on the tarsal lobes there are 3 spines, one above on the extremity of the lobe, and the others below in the same position as those on the tarsi of *Gregorii*. There seem, moreover, to be fewer spines on the lower surface of the foot, since on the inner side of the last tarsus there are only 4 spines, the distal of these being further from the inferior one on the lobe than in *Gregorii*. In the adult male of *exitialis*, moreover, the vesicle is enormously enlarged, as I have previously stated. Since writing the description, however, I have had the opportunity of examining two additional examples of *exitialis* from Shoa. These are both young, the larger measuring 95 millim. and the smaller 80. In both the vesicle is small and there is a tendency on the part of the granules on the hand to run into crests on the external side, and there are 22—23 pectinal teeth.

The two species now under discussion are strikingly nearly allied to *Sc. arabicus* and *Sc. pallidus* of Kraepelin; the former, indeed, recorded from Homran, in Arabia, is very difficult to distinguish from *Sc. exitialis*, of which it might

* Ann. & Mag. Nat. Hist. 1888, ii. p. 249, ♂.

well be the female, and *pallidus* in many of the points mentioned in the description seems to resemble *Sc. Gregorii*. But the locality "Baravez," in Sumatra *, if accurate, forbids such an identification, quite apart from the fact that Kraepelin says *pallidus* resembles *fulvipes* in the structure of its tail &c.

Part II.—CENTIPEDES.

Scutigera rugosa (Newp.).

Scutigera rugosa (Newp.), Ann. & Mag. Nat. Hist. xiii. p. 95 (1844); Tr. Linn. Soc. xix. p. 353 (1845); Cat. of Myriopoda in the Collection of the British Museum, p. 8 (1856).

A single example obtained at Merifano.

In addition to this specimen and the type of the species, which was obtained by Capt. Speke in East Africa, the British Museum possesses but one other example, received from the British East African Company in 1892.

Scolopendra morsitans, Linn.

Athi Plains.

A single specimen presenting the following type of coloration:—head, antennæ, first tergite, legs, and anal somite reddish yellow; tergites 2 to 20 greenish yellow, with a dark green stripe along the hinder border.

Dacetum trigonopoda (Leach).

Mkonumbi.

One specimen. Colour brownish olive-green; legs yellow, apices of anal legs greenish.

Otostigmus tæniatus, sp. n.

Colour green or almost ochre-yellow, with the head-plate and maxillipedes castaneous; the terga marked with four fine deeper green lines, one on each margin and one on each sulcus; antennæ greenish or ochre-yellow; legs pale green or yellow, or yellow obscurely banded with green.

Head smooth, finely punctured, narrow, elliptical in shape. Antennæ elongate, with 17 longish cylindrical segments, the basal three of which are naked or nearly so and the rest pubescent. Maxillæ largely overlapping the head at the

* I venture to suggest that this so-called "locality" may be due to the wrong interpretation of a partially illegible label upon which was originally inscribed the words "Barawa in Somali."

sides, finely punctured; precoxal plates longish, narrow, parallel or diverging, armed with four teeth, the inner fused; femoral tooth indistinctly dentate.

Tergites smooth, punctulate, from the seventh marginate, from the fifth to sixth bisulcate; the last without any median groove. *Sternites* smooth, marked with a pair of median impressions, one in front of the other and longer than it, in addition to two normal sulci; the last two without sulci.

Anal pleuræ with the process short and tipped with two spines; anal legs of average length and thickness; femur without any spine at its distal end, the other spines few in number, 1 or 2 on the upper inner, 2 or 3 on the under inner edge, and 2 or 3 on the under outer.

Legs without tarsal spurs; claws basally spined.

Length up to about 62 millim.

Loc. Merifano and Leikipia (*J. W. Gregory*); also Mombasa (*D. J. Wilson*, type).

This species is unmistakably nearly related to *O. nudum*, Poc. (Ann. & Mag. Nat. Hist. 1890, v. p. 247), from Madras, the form of the head and maxillipedes, the absence of spurs on the tarsi, the grooving of the sterna, &c. being the same in the two species. In *O. nudum*, however, the terga are wrinkled and subgranular and there is a spine close to the apex of the femur of the anal leg. Possibly these distinctions will break down with the discovery of fresh specimens.

Part III.—MILLIPEDES (DIPLOPODA).

POLYDESMOIDEA.

Orodesmus forceps, O. F. Cook.

Loc. Leikipia. One example (type).

Orodesmus ellipticus, O. F. Cook.

Loc. Ngatana. One example (type).

During a recent visit to the British Museum Mr. O. F. Cook, at my request, examined these two specimens and described them as representatives of two new species. So far as I know, the descriptions have not yet been published; but doubtless they will shortly appear.

*Eurydesmus contortus**, sp. n. (Pl. XVIII. fig. 4.)

Colour (probably imperfect) a dull yellowish brown, with

* This species is provisionally only referred to *Eurydesmus*. Doubtless

paler keels and a pair of indistinctly defined paler spots on the dorsal surface of the hinder half of the segments; legs, antennæ, and ventral surface a uniform pale ochre-yellow.

Body broad, nearly parallel-sided, about five times as long as wide, its upper surface shining and nearly smooth, finely punctulate.

Keels well developed, nearly horizontal, though with the posterior angle slightly tilted; the anterior angle convexly rounded, the posterior acutely produced, though only in the last five segments is the hinder border directed backwards; margin around the pore considerably thickened.

Pores looking obliquely upwards and outwards on segments 5, 7, 9, 10, 11, &c.

The *dorsal area* between the keels strongly convex.

Tail triangular, with squarely cut apex and an angular tubercle on each side in front of it.

Lateral surface of segments finely shagreened; a distinct inferior crest visible as far as the seventh or eighth, then dying out and, at most, represented by a small tubercle.

Sternal areas wider than long, longitudinally impressed and, at the posterior end, transversely impressed between the legs, the anterior of which are connected by a ridge; the hinder border studded with long coarse bristles; in the last leg-bearing segment the pieces of the sternum that support the legs of the last pair are coxiform, the distance between the coxæ of the legs being less than the length of one of the coxæ. The sternum of the fifteenth (in the male) is furnished in front with a forwardly directed, small, triangularly pointed tooth, and a low tubercular tooth at the base of the posterior leg; that of the seventh produced posteriorly into a widely rounded basin-shaped hollow, for the reception of the copulatory apparatus; sternum of sixth with an anterior median triangular tooth, directed obliquely forward and downward.

Legs with strong claw, hairy, especially the lower surface of the two basal segments, which have at least one long seta mixed up with shorter ones; tarsus of the first six pairs with an apical pad.

Copulatory organ with its distal portion curled backwards beneath the proximal portion (for the rest see figure).

Measurements in millimetres.—Total length 25, width 5.

Lcc. Mkonumbi. A single male example.

it will fall into one of the many genera which Mr. O. F. Cook has recently projected into literature. Most of these, without diagnoses and without type species, are at present *nomina nuda*; but we feel confident that the publication of them will not be long delayed.

Species allied to this form occur in tropical East Africa as far to the south as Natal; but, judging from the form of the copulatory organ, this species is distinct from all that have been hitherto described.

Tetracentrosternus flavocinctus, sp. n. (Pl. XVIII. fig. 5.)

Body black, first tergite margined with yellow, the rest with a narrow yellow band running from keel to keel along the hinder border; posterior half of keels and of tail yellow; legs and sterna yellow; antennæ black.

Antennæ long and slender, second to fifth segments the longest and subequal, sixth shorter.

Segments smooth above; keels moderately well developed, with posterior angle dentiform; the transverse groove on the tergite beginning on segment 5, dying out on segment 15 or 16; not beaded, nor is the groove separating the two halves of each segment; the lateral inferior crest strong and crescentic, extending as far back as segment 16; the tracheal tubercles also distinct.

Legs long and slender; trochanter about twice the length of the coxa and about half that of the femur; the femur, tarsus, tibia, and patella gradually decreasing in length in the order named.

Caudal process normal, triangular, with rather widely truncate apex.

Anal sternite triangular; the two tubercles moderately large, but not projecting so far as the median apex of the plate.

Sternal areas in the posterior half of the body furnished with a spiniform process at the base of each leg; these gradually die out on the anterior segments.

Length 27 millim., width 4.3.

♂. As in female, but smaller, thinner, with larger keels, and little broader yellow stripes; a broad median erect process on the sternum of the fifth segment.

Legs unmodified (the pair of the seventh segment absent); tarsi of those at the anterior end of the body padded with hairs below.

Copulatory feet as in figure.

Loc. Leikipia (♀); Ngatana (♂). A single example obtained at each spot.

I refer this species provisionally to *Tetracentrosternus* on the strength of the spine-armature of the sterna. It differs from the type of the genus, *subspinosus*, from Burma, in being stouter, in the form of the copulatory organ, as well as in

colour. In the presence of spines it also approaches *St. Swinhoei* from China (Chefoo).

SPIROSTREPTOIDEA.

Alloporus sulcatulus, sp. n.

♀. *Colour* of body and head deep black; antennæ and legs reddish yellow.

Head with deep frontal groove; rugose above, coarsely wrinkled between the antennæ and the adjoining area, smooth just above the labial margin; distance between the eyes rather less than the diameter of an eye; eyes acutely angular, internally composed of about 52 ocelli arranged in about 8 transverse series.

Antennæ moderately long, segments gradually decreasing in length from the second to the sixth.

First tergite wrinkled, punctured and irregularly sulcate above and at the sides; lateral process much enlarged, produced forwards into a large rounded angle, with a deep marginal sulcus, above which there is another very strong sulcus following nearly the same curvature, with a third strong sulcus on its postero-inferior angle. The rest of the segments with posterior part separated by a distinct groove from the anterior, and strongly though somewhat irregularly longitudinally sulcate from base to summit, as well as ornamented with less definite sculpturing, the sulci becoming fainter towards the hinder end; but anteriorly the areas that they define become at the sides of the body cariniform or tuberculiform, as in *Lophostreptus*; anterior part of segments transversely cristulate behind, smoother in front; sterna smooth.

Pores small in the middle of the posterior part of the segments.

Anal somite.—Tergite punctulate and rugose, scarcely angular; valves with thickened and strongly sulcate margin; sternite with posterior border nearly transverse.

Number of segments 47.

Length about 70–75 millim., width 7.

Loc. Giriama, near Fuladoya. A single female specimen.

Genus *LOPHOSTREPTUS*, Cook.

Lophostreptus, Cook, Ann. New York Acad. Sci. ix. p. 5 (1895).

Lophostreptus armatus, sp. n. (Pl. XVIII. fig. 6.)

♀. *Colour* (in alcohol). Anterior portion of segments a

dirty white, posterior portion quite black; head and antenna paler than posterior half of segments, sometimes brownish red; legs and anal somite reddish or yellowish brown.

Head densely punctured, though much more coarsely above than below; irregularly impressed above the labial border, frontal sulcus distinct; labial excision deep, the tooth large.

Eyes furnished with about 44 ocelli arranged in 6 transverse rows.

Antennæ punctured, moderately long, slightly incrassate, the second segment a little the longest, the segments strongly narrowed at the base.

First tergite densely punctured and rugulose, with a row of cariniform teeth along its hinder border; laterally these pass into a series of (6) oblique ridges, which traverse the side of the segment; this lateral portion evenly narrowed, with straight anterior border, obtuse anterior angle, and rectangular hinder angle. The rest of the terga with the posterior part sharply marked off from the anterior, the sulcus being very deep; the posterior part ornamented with a series of close-set, smooth, posteriorly dentiform, longitudinal keels, running from the base of the legs up to the summit; these keels become smaller, more dentiform, or even tubercular on the infero-lateral parts of most of the segments, but at the anterior extremity of the body they are stronger below than above; these keels are not always even, some being sometimes rather shorter than the others; keels vary in number from about 33 to 37 on each side, making a total average of about 70. Anterior part of segment in the middle of the body closely and finely punctulate above, rather more coarsely below; in the anterior part of the body the sculpturing of this half becomes coarser and coarser, and there is a fine transverse ridge just in front of the groove.

Sterna strongly sulcate transversely; a fine fringe running along the posterior border of the terga.

Anal somite not carinate, densely granular; no caudal process, the border of the tergite evenly convex; valves with a strong keel on each side of their suture, running from summit to base; sternite transverse.

Legs of medium length; each segment furnished below with one or two apical setæ, and a few shorter ones behind them; setæ stronger on the anterior legs.

Segments 1 to 3 open below, each with a pair of legs; the fourth without legs, its two sides united in the middle line below. The generative ducts, at least in the male, opening upon two small processes lying behind the second pair of legs at their base.

♂. Slenderer than female; collum not modified; angle of mandible larger; feet not padded.

Number of segments about 50.

Length about 50–55 millim.

Loc. Ngatana.

I think there is no reason to doubt that this species is congeneric with *Glyphiulus magnus* of Karsch (Zeits. Naturw. (3) vi. p. 14, 1881), which Mr. O. F. Cook has made the type of his genus *Lophostreptus*. The two, indeed, might be identical but for Karsch's statement to the effect that the tergites in *magnus* are scarcely visibly segmentate, whereas in *L. armatus* the sulcus is very deep.

Odontopyge Gregorii, sp. n.
(Pl. XVIII. fig. 7.)

♀.—*Colour.* Segments blackish or very deep green, with a clearly defined yellow band running along the hinder border from base to summit; the anterior covered portion yellow, with a fine median dorsal black line; legs also entirely yellow; collum or first tergite completely bordered with yellow; antennæ yellow at the base, for the rest deep green; lower half of head yellow, upper black; anal valves finely margined with yellow (the green and yellow were probably black and red respectively before immersion in alcohol).

Head smooth and polished, with a conspicuous frontal sulcus; a fine impression running from eye to eye; eyes with inner angle not very noticeably acute; a shallow impression close to the socket of antenna on the interantennal area; six pores above the labial impression and four close to the margin on each side of it.

Antennæ moderately long, with the distal segments (4 to 6) strongly narrowed at the base.

First tergite crossed below with two sulci in addition to the one that defines the border. The segments finely striolate above; the transverse sulcus strong and deep, the area in front of it finely striate transversely, the area behind strongly grooved longitudinally at the sides; on the anterior segments these grooves are deeper and run up above the pores, but posteriorly they become gradually weaker, do not surpass the pores, and almost die away.

Sterna smooth.

Pores moderately conspicuous, well behind the sulcus.

Anal tergite not carinate, posteriorly acutely angled; valves with margins not grooved, the teeth small and vertical; sternite triangular.

Legs with lower surface of all the segments bristly, the bristles longer at the distal ends of the segments; upper surface of the legs finely hairy, the hairs more conspicuous upon the tarsus and upon the basal segments (trochanters) of the anterior legs; in the anterior half of the body the trochanter of the posterior legs on each segment is flat below, while that of the anterior leg is compressed.

♂. Resembling female, but thinner, with the sixth segment a little expanded and the anterior angle of the first more rectangular.

Legs with fourth (antepenultimate) segment padded below, the pad larger on the anterior legs, gradually disappearing posteriorly and scarcely visible on the legs of the last six segments.

Copulatory foot as in figure; anterior lamina long and rather slender, notched inferiorly; coiled portion consisting of two main pieces—a double flagellum, of which the outer branch is longer, stouter, and spirally coiled at the tip, while the inner is much shorter, thinner and simply pointed, and of a complicated semi-membranous sheath, also double, one of the branches being leaf-like, with serrate edges and a bifid tip.

Number of segments over 70 (71 or 72).

Length about 85–90 millim.

Loc. Ngatana. Several examples.

Odontopyge semistriata, sp. n.

(Pl. XVIII. fig. 9.)

Allied to the preceding in most structural details, but certainly different in the following respects:—

The sides and lower surface of the body reddish yellow, but the posterior half of the upper surface ornamented with a black transverse stripe which extends down to the pore, though it thins off just above this point; when the body is spirally coiled these black bands are separated by the yellow colour of the anterior part of the segments, but when the body is extended, as in crawling, the black stripes are contiguous or nearly so, so that the upper surface of the body appears to be black; the first tergite with its posterior two thirds black above; anal tergite black above; valves black above; face black, rather paler inferiorly; antennæ fuscous, with the basal two segments pale; legs entirely yellow.

♀. *Head* resembling that of *O. Gregorii*, but with the transverse stria between the eyes much deeper, very conspicuous; the inner angle of the eye more acute; the area above the labrum distinctly grooved and roughened. No

impressions at the base of the antennæ on the inner side. *Antennæ* with the segments thinner and longer, not strongly expanded at their distal end.

First tergite laterally more squared, crossed by two sulci, the lower of which is only a little above the margin. The rest of the segments finely striolate, but shining, not dull as in *Gregorii*; the areas in front of and behind the sulcus more elevated than in the last-named. The apices of the anal valves a little longer and rather thicker.

Legs almost as in *Gregorii*, but less smooth at the sides and above; the trochanters not different.

♂. With fourth and fifth segments of legs padded; trochanter of posterior leg of each segment thick and flattened below, anterior compressed. First tergite laterally more expanded, with anterior angle rectangularly rounded.

Copulatory foot as in figure.

Length about 70 millim.

Number of segments 63 to 66.

Loc. Ngatana (types) and Leikipia.

Odontopyge Wilsoni, sp. n.
(Pl. XVIII. fig. 8.)

♀.—*Colour* (in alcohol) a tolerably uniform olive-brown, with a deeper band running along the hinder border of the segments.

Head as in *O. semistriata*, but more rugulose below, and the transverse interocular sulcus weaker.

Antennæ with long and slender segments.

Collum with one lateral sulcus in addition to the marginal one, as in *semistriata*.

Segments segmentate, striolate, and laterally striate, as in the other species, and showing same position of pores.

Anal segment shorter than in the preceding two species; height of the valves exceeding the length of the tergite. In the anterior third of the body the posterior legs of each segment have their basal four segments flattened and excavated below.

♂. Face smooth and polished below; first tergite laterally expanded, convexly rounded anterior angle.

Legs behind the seventh segment, with fourth and fifth segments padded below, except quite at the hinder end of the body, where the pad on the fifth entirely dies off and that on the fourth nearly so; the coxa and trochanter of the posterior leg of the segments behind the seventh expanded and flattened below.

Copulatory organ as in figure.

Number of segments, ♀ 69, ♂ 68.

Length of ♀ 130 millim., width 10·5; of ♂ 114, width 9·5.

Loc. Mombasa (*D. J. Wilson*), ♂ ♀. Fragments of a female example belonging apparently to this species were brought by Dr. Gregory from the Papyrus swamp north of Rangan.

EXPLANATION OF PLATE XVIII.

- Fig. 1.* *Babycurus pictus*, sp. n. Enlarged.
Fig. 2. *Scorpio cavimanus*, Poc. Upperside of hand of male example from Ugogo.
Fig. 2 a. Ditto. Posterior tarsus from below.
Fig. 3. *Scorpio Gregorii*, sp. n. Upperside of hand of male example from Tzavo.
Fig. 3 a. Ditto. Posterior tarsus from behind.
Fig. 3 b. *Scorpio exitialis*, Poc. Posterior tarsus from behind.
Fig. 4. *Eurydesmus contortus*, sp. n. Right copulatory foot from the inner side.
Fig. 5. *Tetracentrosternus flavocinctus*, sp. n. Right copulatory foot from below.
Fig. 6. *Lophostreptus armatus*, sp. n. Anterior aspect of left half of copulatory organ.
Fig. 7. *Odontopyge Gregorii*, sp. n. Anterior aspect of left half of copulatory organ.
Fig. 8. *Odontopyge Wilsoni*, sp. n. Anterior aspect of left half of copulatory organ.
Fig. 9. *Odontopyge semistriata*, sp. n. Anterior view of right half of copulatory organ.

LXII.—*Descriptions of new Lizards from Madagascar.*

By G. A. BOULENGER, F.R.S.

Diplodactylus robustus.

Head large, oviform, very distinct from neck, once and one third as long as broad; the skin confluent with the cranial ossification; snout longitudinally grooved in the middle, as long as the distance between the eye and the ear; ear-opening narrow, vertical. Limbs moderate; digits short, granular inferiorly, very feebly dilated at the end; the granules replacing the subdigital lamellæ forming three longitudinal series. Upper surface of head covered with large polygonal juxtaposed tubercles; supraocular region covered with large polygonal flat scales in the middle, with granules on the borders; temporal region with small flat granules and large subconical tubercles. Rostral nearly twice as broad as deep, widely separated from the nostril; 10 or 11 upper labials, first entering the nostril; 10 lower labials, each with a small

